Thunderbolt™ Product

ThunderBox 600

(Thunderbolt 2 & USB 3.0 to 6Gb/s SAS RAID)

Quick Start Guide

Version: 1.2

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FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

Manufacturer's Declaration for CE Certification

We confirm ThunderBox 600 has been tested and found compliant with the requirements in the council directive relating to the EMC Directive 2004/108/EC. Regarding to the electromagnetic compatibility, the following standards were applied:

EN 55022: 2006, Class B
EN 61000-3-2: 2006
EN 61000-3-3: 1995+A1: 2001+A2: 2005

EN 55024:1998+A1:2001=A2:2003
IEC61000-4-2: 2001
IEC61000-4-3: 2006
IEC61000-4-4: 2004
IEC61000-4-5: 2005
IEC61000-4-6: 2006
IEC61000-4-8: 2001
IEC61000-4-11: 2004

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INSTALLATION

1. Installation

This section describes how to install the ThunderBox 600 Thunderbolt 2 & USB 3.0 to 6Gb/s SAS RAID storage with host computer and disks.

1.1 Before You First Installing

Thanks for purchasing the ThunderBox 600 as your RAID data storage. The following manual gives simple step-by-step instructions for installing and configuring the ThunderBox 600 RAID storage.

Unpack
Unpack and install the hardware in a static-free environment. ThunderBox 600 RAID storage is packed inside an anti-static bag between two sponge sheets. Remove it and inspect it for damage. If the ThunderBox 600 RAID storage appears damaged, or if any items of the contents listed below are missing or damaged, please contact your dealer or distributor immediately.

Checklist
- 1 x ThunderBox 600 6-bays RAID storage unit
- 1 x Installation CD – containing driver, relative software, an electronic version of this manual and other related manual
- 1 x RJ-45 LAN cable
- 1 x USB 3.0 cable (USB 2.0 compatible)
- 1 x Thunderbolt cable
- 1 x Power cord
- 24 x Drive mounting screws (4 per drive tray)
- 1 x Quick start guide

System Requirements
- Computer with Thunderbolt connector
- Mac OS X 10.8.5 or higher
- Windows 7&8

"For Windows PC: the Thunderbolt certified device driver must be installed before plugging in the device for it to function properly"

1.2 Summary of RAID Storage Setup Steps

- **For Mac OS X**

Step 1. Physically Install the Hardware (Chapter *1.5.1*)
1. Install HDDs.
2. Connect power cord.
3. Connect Thunderbolt cable.

Step 2. Install the MRAID Software Package (Chapter *1.5.2.1*)
1. Download the install_mraid installer from the website at *"http://www.areca.com.tw/support/s_ thunderbolt/thunderbolt.htm"*.
2. Double-click on the install_mraid zipped file.
3. Double-click on the install_mraid icon on the Finder.
4. Follow the installer on-screen steps to complete the installation.

Step 3. Configure RAID Volumes (Chapter *1.5.2.2*)
1. Double-click on the "MRAID" icon on the desktop.
2. Double-click on the "ArcHTTP64".
3. Locate "ThunderBox 600 Web Management" and launch the McRAID storage manager.
4. Login User Name "admin" and the Password "0000".
5. Click on the "Quick Create" to configure the volume.
6. Follow the on-screen steps to complete the configuration.

Step 4. Format RAID Volumes (Chapter *1.5.2.3*)
1. Mac OS X recognizes that a new disk is available.
2. Follow the Disk Utility on-screen steps to initialize and partition your unit.
3. Icons for each new partition show up on your desktop.
4. They are now ready to use.

- **For Windows**

Step 1. Physically Install the Hardware (Chapter *1.5.1*)
1. Install HDDs.
2. Connect power cord.
3. Connect Thunderbolt cable.

Step 2. Install the MRAID Software Package (Chapter *1.5.3.1*)

1. Download the install_mraid installer from the website at "*http://www.areca.com.tw/support/s_ thunderbolt/thunderbolt.htm*".
2. Double-click on the install_mraid zipped file.
3. Double-click on the "setup.exe" unzip file.
4. Follow the installer on-screen steps to complete the installation.

Step 3. Configure RAID Volumes (Chapter *1.5.3.2*)

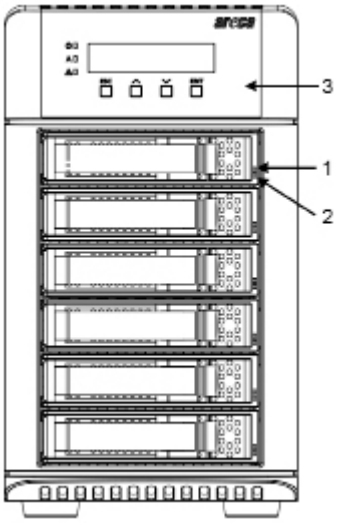
1. Double-click on the "MRAID" icon on the desktop.
2. Double-click on the "ArcHTTP64".
3. Locate "ThunderBox 600 Web Management" and launch the McRAID storage manager.
4. Login User Name "admin" and the Password "0000".
5. Click on the "Quick Create" to configure the volume.
6. Follow the on-screen steps to complete the configuration.

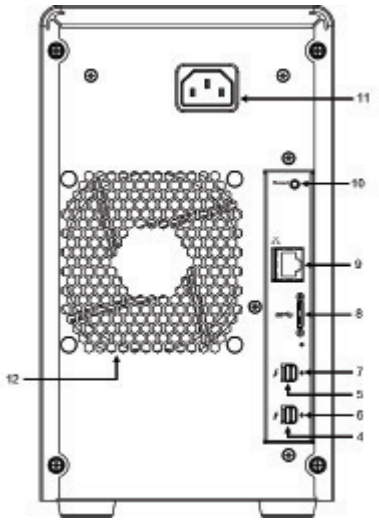
Step 4. Format RAID Volumes (Chapter *1.5.3.3*)

1. Click "Start" ==> right-click "Computer" and select "Manage".
2. Click "Disk Management" in the left pane.
3. Scroll down to the bottom of the middle pane. Windows will display a list of new drives attached to your system with a label such as "Disk 1" or "Disk 2", etc.
4. Right-click on the drive you want to partition and then again to format it.
5. Once it's formatted, Windows automatically assigns the next available drive letter to it and then it will appear in Windows Explorer.
6. They are now ready to use.

1.3 RAID Storage View

The following diagram is the RAID storage front view and rear view.





Front View	Rear View
1. Disk Activity LED 2. Disk Fault / Link LED 3. LCD Panel with Keypad	4. Thunderbolt Port1 5. Thunderbolt Port2 6. Thunderbolt Port1 Link LED 7. Thunderbolt Port2 Link LED 8. USB 3.0 Port 9. LAN Port (For McRAID Web Manager) 10. Reset Button 11. Power Connector 12. System Fan

1.4 Locations of the Storage Component

The following components come with LEDs that inform ThunderBox 600 RAID storage managers about the operational status.

1.4.1 Drive Tray LED Indicators

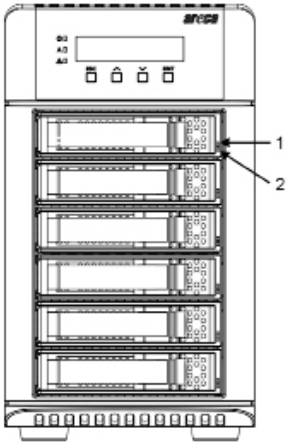


Figure 1-1, Activity/Fault LED

The following table describes the RAID storage disk drive tray LED behavior.

Tray LED	Normal Status	Problem Indication
1. Activity LED (Blue)	1. When the activity LED is lit, there is I/O activity on that disk drive. 2. When the LED is not lit; there is no activity on that disk drive.	N/A
2. Fault/Link LED (Red/Green)	1. When the fault LED is lit, there is no disk present. 2. When the link LED is lit, there is a disk present.	1. When the fault LED is off, the disk is present and status is normal. 2. When the fault LED is blinking (2 times/sec.), the disk drive has failed and should be hot-swapped immediately. 3. When the activity LED is lit and fault LED is fast blinking (10 times/sec.) there is rebuilding activity on that disk drive.

1.4.2 LCD Panel LED Indicators

There are a variety of status conditions that cause the RAID storage panel monitoring LED to light. The front panel LCD comes with three (3) status-indicating LEDs. The LEDs on the front panel are defined, from top to bottom, Power, Busy, and Caution, as shown in Figure 1-2.

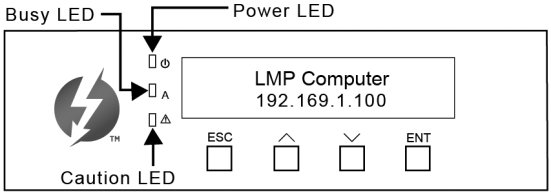


Figure 1-2, LCD Panel LED

The following table provides a summary of the front panel LED.

Panel LED	Normal Status	Problem Indication
1. Power LED (Green)	Solid green, when power on.	Unlit, when power on.
2. Busy LED (Amber)	Blinking amber during host accesses RAID storage.	Unlit or never flicker.
3. Caution LED (Red)	Unlit indicates that the RAID storage and all its components are operating correctly.	Solid indicates that one or more component failure/Urgent events have occurred.

1.4.3 Thunderbolt Port LED Indicators

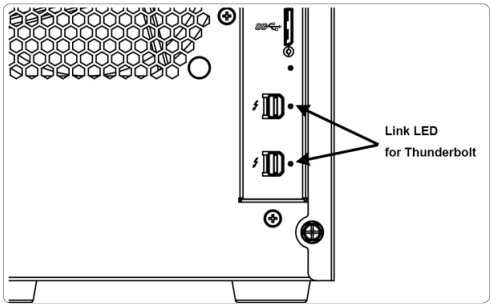


Figure 1-3, Thunderbolt Ports LED

The following table describes the ThunderBox 600 SAS RAID storage Thunderbolt port link LED behavior.

Thunderbolt Ports Link LED	Status
Green light	1. Lit indicates RAID storage is powered and maintained the daisy chain with other Thunderbolt devices. 2. Blinking (5 times/sec) that indicates RAID storage is in sleep mode. 3. Blinking (1 time/sec) that indicates RAID storage is powered down and maintained the daisy chain with other Thunderbolt devices.
Amber light	There is a proper DisplayPort connection on that Thunderbolt port.
Red light	There is a proper DisplayPort to DVI connection on that Thunderbolt port.

1.5 Setting Up RAID Storage

Setting up your ThunderBox 600 RAID storage involves these main steps:
- Physically Install the RAID Storage and Drives
- Install the MRAID Software
- Configure RAID Volumes
- Format RAID Volumes
- Unmounting RAID Volumes

Details about these steps are described in the following sections.

1.5.1 Physically Install RAID Storage and Drives

Please follow the steps below in order they are given to ensure that your ThunderBox 600 connected on your Thunderbolt computer.

Step 1. Install the Drives in the ThunderBox 600 RAID Storage

Your RAID storage supports up to 6 x 3.5-inch disk drives or 6 x 2.5-inch SAS or SATA 6.0Gb/s drives, each one contained in its individual hole on the disk carrier. Each drive is hot-pluggable, allowing you to remove and insert drives without shutting down your RAID storage. Installation in this section describes how to install or remove 3.5 inch drives in your RAID storage.

1. Gently slide the drive tray out from the ThunderBox 600 RAID storage.

2. Install the drive into the drive tray and secure the drive to the drive tray by four of the mounting screws.

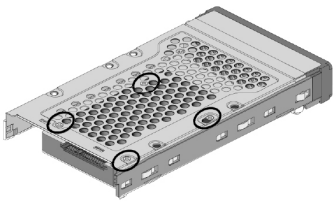


Figure 1-4-1. Installing 2.5-inch SAS/SATA Drive

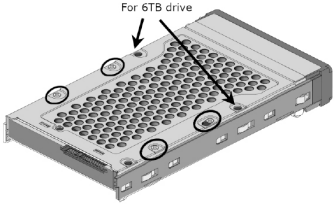


Figure 1-4-2. Installing 3.5-inch SAS/SATA Drive

3. After all drives are in the drive tray, slide all of them back into the ThunderBox 600 RAID storage and make sure you latch the drive trays.

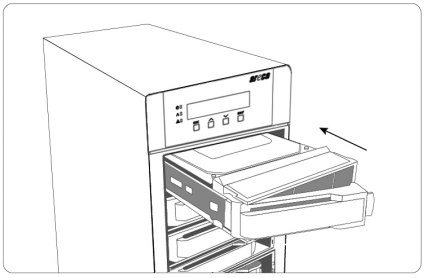


Figure 1-5, Sliding Drive Tray into Enclosure

Step 2. Connecting RAID Storage to Thunderbolt Ports

Thunderbolt connectors are provided on the back of the ThunderBox 600 RAID storage for connecting the array to Thunderbolt host and next Thunderbolt devices. There are two Thunderbolt connectors on the rear of ThunderBox 600 RAID storage. You can plug-in two host ports.

1. Direct connection to a Thunderbolt technology capable computer.

2. Daisy chaining Thunderbolt capable devices and displays.

- **Thunderbolt Computer Port Connection**

By installing Thunderbolt technology capable computer and ThunderBox 600 Thunderbolt port using the Thunderbolt cable which is included in your Thunderbolt capable computer. Then connect ThunderBox 600 RAID storage and Thunderbolt technology capable computer port as shown below:

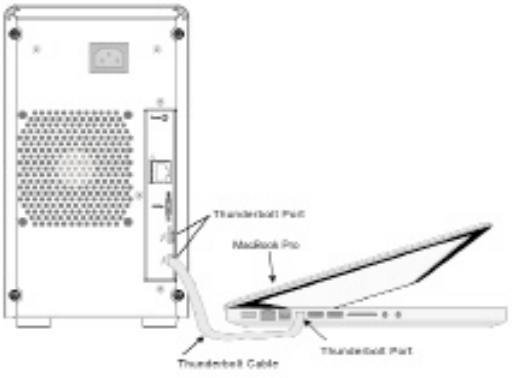


Figure 1-6, Connecting to Thunderbolt Computer

- **Daisy Chain Topologies**

A single Thunderbolt technology daisy chain can have seven devices, including the computer. Connect the cable to one of the interface ports on the back of your ThunderBox 600 RAID storage and to your Thunderbolt capable computer. The additional port may be used to daisy chain compatible computer peripherals, such as hard drives, monitors, and much more. A single Thunderbolt port supports hubs as well as a daisy chain of up to seven Thunderbolt devices on, including the Thunderbolt capable computer.

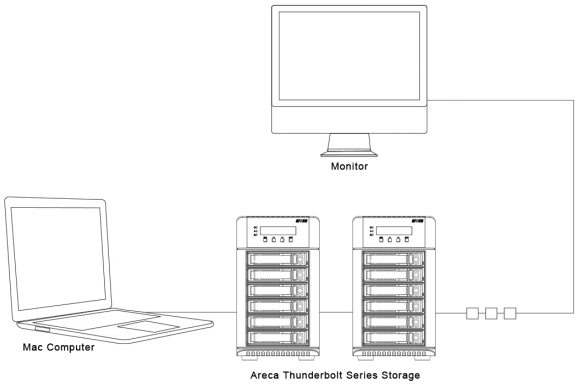


Figure 1-7, Thunderbolt Computer Daisy Chain

USB 3.0

The ThunderBox 600 RAID storage uses a SuperSpeed USB (USB 3.0), providing an even greater enhancement in performance—up to 40 times faster than USB 2.0, with a design data rate of up to 5Gbps as opposed to USB 2.0's 480Mbps. Your ThunderBox 600 RAID storage is shipped with a USB 3.0 cable, to ensure maximum data transfer performance when connected to a SuperSpeed USB (USB 3.0) port. If your computer only has a USB 2.0 connection, then ThunderBox 600 will auto-negotiate to USB 2.0 speeds. This makes it easier for ThunderBox 600 as an external higher speed storage solution. The following table describes the LED indication status for USB port.

USB 3.0 Port Status LED	Indication
Link LED	Solid illuminated
Activity LED	Blinking (Host access)

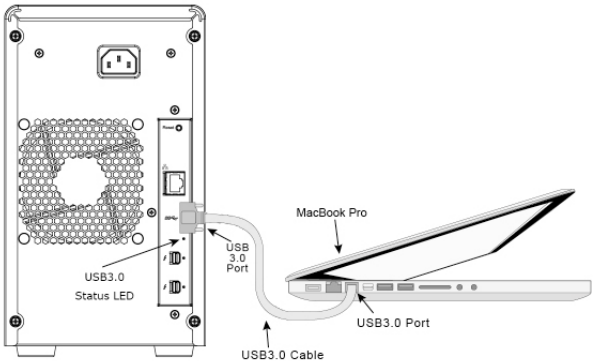


Figure 1-8, Connecting USB 3.0 Port to Host Computer

Step 3. Connecting Monitor Port (Optional)

You can connect LAN port to the manager clinet system, if you want to configure and manage the RAID storage from the clinet system through out-of-band manager.

- **LAN Port Connection**

  User can remote manage the RAID enclosure without adding any user specific software (platform independent) via standard web browsers directly connected to the 10/100Mbit RJ45 LAN port. Connect LAN port of the ThunderBox 600 using the included Ethernet cable and then to a LAN port or LAN switch.

Step 4. Connecting RAID Storage Power

To power the RAID storage:

1. Using the included power cord, connect this power cord to a grounded electronical outlet and to the ThunderBox 600 RAID storage.

2. ThunderBox 600 RAID storage will automatically turn on when host computer power on status is received from the thunder bolt cable. It takes about 30 seconds to fully start up the RAID storage.

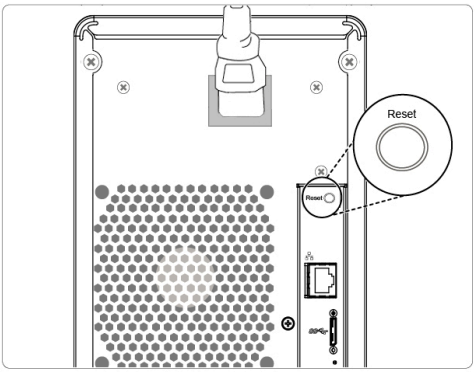


Figure 1-9, Connecting the Power to Enclosure.

3. ThunderBox 600 RAID storage automatically turns off when the computer to which it is attached sleeps or is disconnected.

Note:

You can press and hold the "Reset" button for 3 seconds to force the RAID storage AC power on or off.

When you are finished installing the ThunderBox 600 RAID storage, you can set up the RAID volume using McRAID storage manager or LCD to set up RAID volumes.

1.5.2 Mac Users

1.5.2.1 Install the MRAID Software

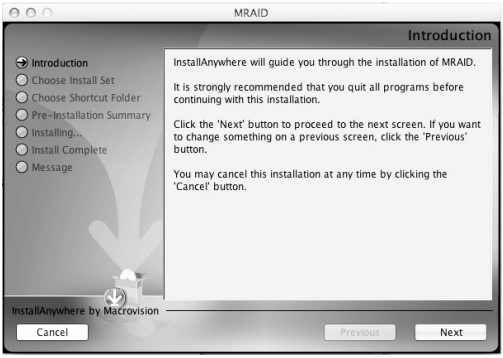
This section describes detailed instructions for installing the Mac driver & utility for the ThunderBox 600 on your Apple Thunderbolt capable machine. You must have administrative level permissions to install Mac OS X driver & utility. This can be done in just a few steps!

1. Download the install_mraid installer from the website at "*http://www.areca.com.tw/support/s_ thunderbolt/thunderbolt.htm*", the file name begins with "install_mraid" followed by the version control or insert the ThunderBox 600 software CD in the CD-ROM drive.

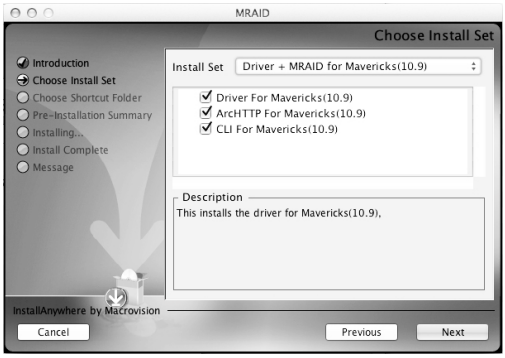
2. Double-click on the zipped file that comes from the website or resides at <CDROM>\packages\MacOS to add the installer on the Finder.

3. Launch the installer by double-clicking the install_mraid on the Finder. The MRAID Installer opens. Click on the "**Next**" button to begin the installation.

4. The MRAID Installer opens. Click on the "**Next**" button to begin the installation.


MRAID
Introduction
Introduction
Choose Install Set
Choose Shortcut Folder
Pre-Installation Summary
Installing...
Install Complete
Message
InstallAnywhere will guide you through the installation of MRAID.
It is strongly recommended that you quit all programs before continuing with this installation.
Click the 'Next' button to proceed to the next screen. If you want to change something on a previous screen, click the 'Previous' button.
You may cancel this installation at any time by clicking the 'Cancel' button.
InstallAnywhere by Macrovision
Cancel
Previous
Next

5. On the Choose Install Set screen, click on an icon to install special components and click on the "**Next**" button to continue.



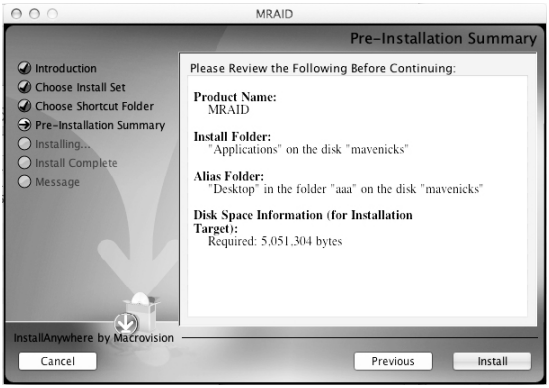
- **Driver** is required for the operating system to be able to interact with the ThunderBox 600 RAID storage.

- **ArcHTTP** has to be installed for GUI RAID console (MRAID storage manager) to run. It also runs as a service or daemon in the background that allows capturing of events for mail and SNMP traps notification. Refer to the Chapter 3 ArcHTTP Configuration on ThunderBox 600 user manual, for details about the mail and SNMP traps configuration.

- **CLI (Command Line Interface)** provides the functionality available in MRAID storage manager through a Command Line Interface. You can set up and manage RAID storage inline. CLI performs many tasks at the command line. You can download CLI manual from Areca website or software CD <CDROM>\ DOCS directory.

6. On the Choose Alias Folder screen, click on an icon to choose where you like to create aliases and click on the "**Next**" button to continue.

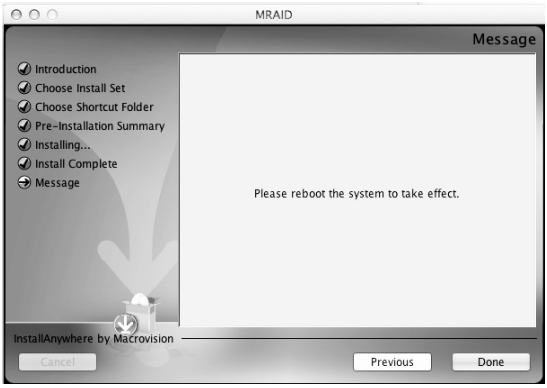
7. On the Pre-Installation Summary screen, review your installation setting and click on the "**Install**" button to continue. If you want to change any of your installation setting, click on the "**Previous**" button.



8. A program bar appears that measures the progress of the driver installation.

9. When this screen shows, you have completed the driver installation and click on the "**Next**" button to continue.

10. After installation is completed, click on the "**Done**" button to reboot your computer in order to complete installation.



11. The ArcHTTP and ArcCLI are installed at the same time on ThunderBox 600. Once ArcHTTP and CLI have been in stalled, the ArcHTTP background task automatically starts each time when you start your computer. There is one MRAID icon showing on your desktop. This icon is for you to launch the McRAID storage manager (by ArcHTTP) and CLI utility. If you have not yet installed the hardware, please follow the "1.5.1 Physically Install RAID Storage and Drives" section to install it. Otherwise, to begin the creation volume, go on the "1.5.2.2 Configure RAID Volumes" section to configure the volume.

1.5.2.2 Configure RAID Volumes

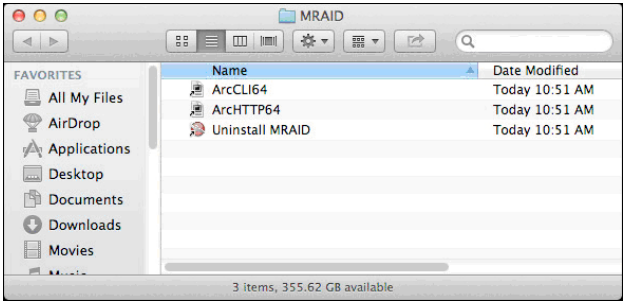
There are often multiple ways to accomplish the same configuration and maintenance tasks for your RAID storage. Your ThunderBox 600 RAID storage can be configured by one of the following
methods:

1. McRAID Storage Manager from ArcHTTP. (Thunderbolt port)
2. McRAID Storage Manager Through LAN port.
3. LCD Panel with Keypad.

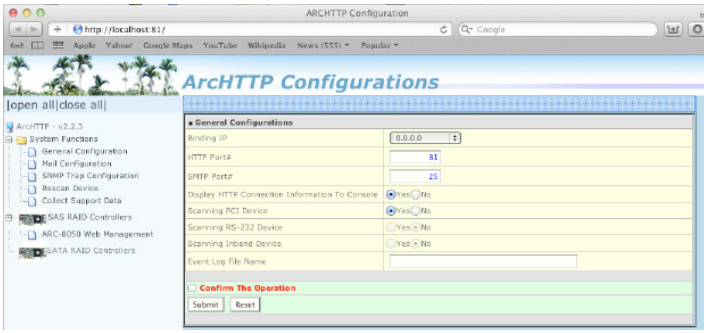
- Method 1: McRAID Storage Manager From ArcHTTP

  Start McRAID Storage Manager – Browser Edition

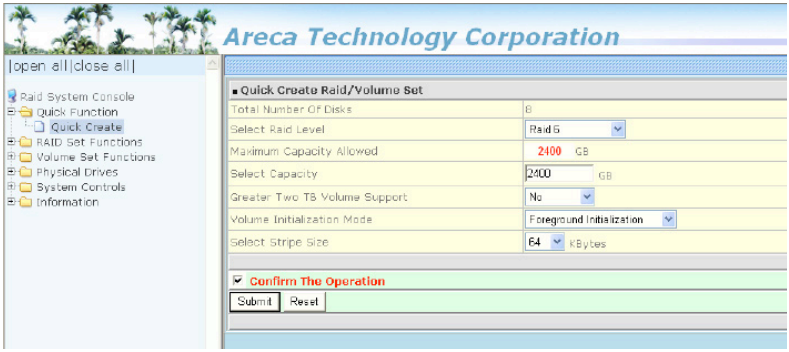
  There is one "**MRAID**" icon showing on your desktop. Double-click on the "**MRAID**" icon to locate your ArcHTTP utility and CLI program file folder.



When you double-click on the "**ArcHTTP64**", it shows all RAID storages available on the system and create an individual RAID storage icon located on left column of the "ArcHTTP Configurations" screen.



Locate "ThunderBox 600 Web Management" and launch the selected McRAID storage manager. Enter RAID storage default User Name "**admin**" and the Password "**0000**" when the login page prompted for it. After logging in, the McRAID storage manager process starts.

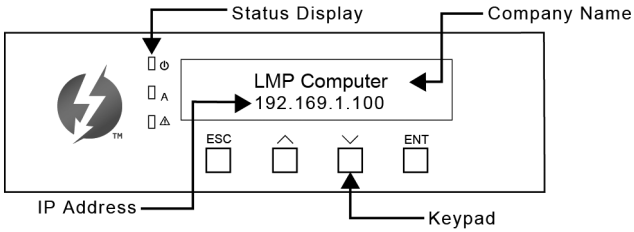


Click on the "Quick Create" in the main menu, your volume is automatically configured based on the number of disks in your system. You can create a RAID set associated with exactly one volume set. The user can change the Raid Level, Capacity, Initialization Mode, and Stripe Size. A hot spare option is also created, depending on the exist configuration. Tick on the "Confirm The Operation" check box and click on the "Submit" button, the RAID set and volume set will start to initialize. If you prefer to customize your volume set, please use the "Raid Set Functions" and "Volume Set Functions". See chapter 4 of ThunderBox 600 user manual for information on customizing your RAID volumes using McRAID storage manager. Otherwise, to begin using the ThunderBox 600 right away, go on the next "Format the Volume" section to begin the formatting procedure.

- Method 2: McRAID Storage Manager Through LAN port
  User can remote manage the RAID storage directly connected to the 10/100Mbits RJ45 LAN port via standard web browsers. To configure ThunderBox 600 RAID storage using a LAN port, you need to know its IP address. The default IP address will be shown on the LCD initial screen. Launch your web browser-based McRAID storage manager by entering http://[IP Address] in the web browser. Enter RAID storage default User Name "**admin**" and the Password "**0000**" when the login page prompted for it. After logging in, the McRAID storage manager process starts. Follow the on-screen steps, responding as needed, to configure RAID volume. See the Chapter 4 of ThunderBox 600 user manual for information on customizing your RAID volumes using McRAID storage manager.

- Method 3: LCD Panel with Keypad
  You can use LCD front panel and keypad function to simply create the RAID volume. The LCD status panel also informs you of the disk array's current operating status at a glance. The LCD configuration is described in a separate manual: ThunderBox 600_LCD manual. It is available on your CD, in the /docs folder. The LCD provides a system of screens with areas for information, status indication, or menus. The LCD screen displays up to two lines at a time of menu items or other information. ThunderBox 600 RAID storage default User Name is "**admin**" and the Password is "**0000**".

  The LCD initial screen is shown below:



1.5.2.3 Format RAID Volumes

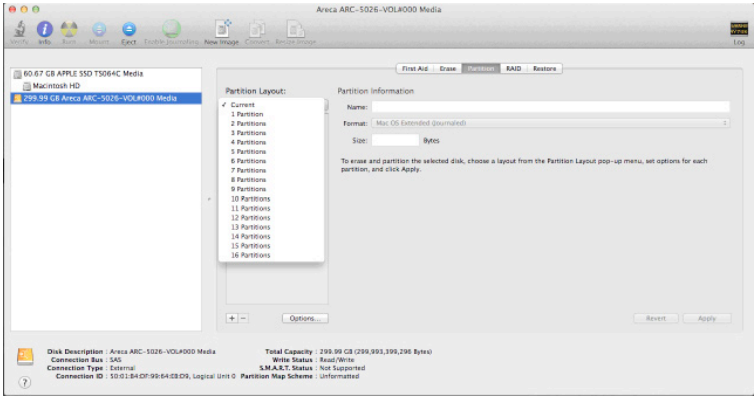
After the volume set is ready for system accesses, it needs to be partitioned, formatted, and mounted by the operating system.

When you create a volume through McRAID storage manager, the Mac OS X recognizes that a new disk is avail, and displays a message asking what you next want to do. If the message does not show up, start the "Disk Utility" manually from the "Finder", use the "Go" menu and open the "Utilities" folder. Double-click on the "Disk Utility" program.

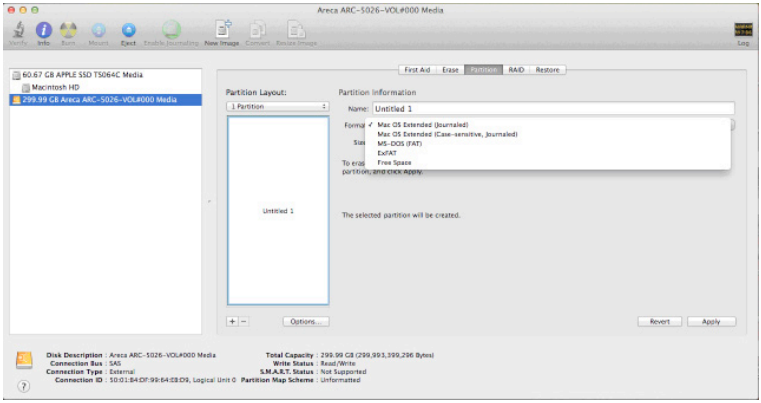
To initialize and partition your unit

1. When the Disk Utility window opens, find and select the desired drive in the sidebar that represents your RAID storage and click on the "**Partition**" button.

2. In the Partition Layout column, click on the "**Current**" to show the drop-down menu and select the number of partitions that you want your RAID storage to have. Each partition will appear as a separate drive on your computer.



3. Specify your Partition Information, Option setting and click on the "**Apply**" button.



If you're not sure which format to use, choose Mac OS X Extended (Journaled).

4. When a message asks you to confirm you want to partition the disk, click on the "**Partition**" button. This may take a couple of minutes, depending on the size of the drives in your RAID storage. When the partitioning is complete, icons for each new partition show up on your desktop. They are now ready to use.

1.5.2.4 Make A Bootable RAID Volume

You can follow the following procedures to add ThunderBox 600 RAID volume on Intel-based Mac bootable device listing.

1. Set the BIOS selection in System Controls: Advance Configuration to "EFI" option for Intel-based Mac boot.

2. Download OS X Mavericks and DiskMaker X. Follow the DiskMaker X to make a bootable OS X Mavericks USB install drive.

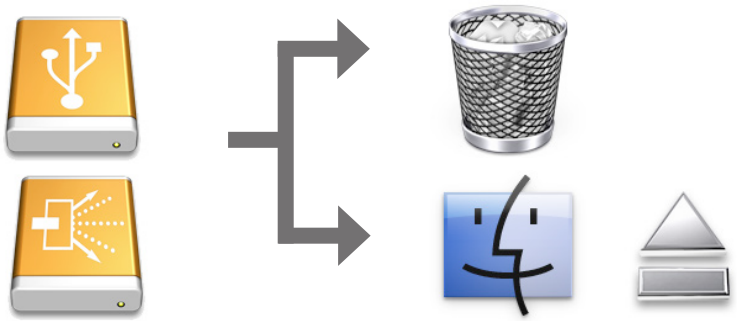
3. Restart your Mac and after you hear the chime sound, press the Option (Alt) key until you see the option to choose the flash drive to boot from.

4. Follow the on-screen prompts to complete Volume Upgrade and Clean Install of OS X Mavericks. Power up the Intel-based Mac and the volume will be added in the bootable device automatically.

1.5.2.5 Unmounting RAID Volumes

To avoid possible data corruption, LMP recommends that ThunderBox 600 RAID storages volume(s) be properly unmounted from the computer prior to turning off the RAID storage or safely removing the Thunderbolt interface cable.

1. Drag RAID storage volume(s) icon to the trash. The Trash will turn into an Eject arrow. This will assure that all data is properly cleared from the system memory before the volume is removed.



2. When the volume icon disappears from the desktop, RAID storage can be disconnected from the computer.

1.5.3 Windows Users

1.5.3.1 Install the MRAID Software

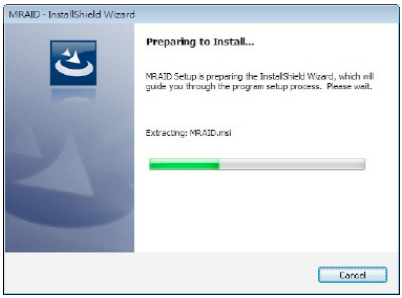
This section describes how to install the MRAID software to your operating system. The software installation includes device driver, ArcHTTP and CLI utility.

In this scenario, you are installing the MRAID software in an existing Windows system. You can use the installer to install driver, ArcHTTP and CLI at once or "Custom" to install special components. Follow the steps below to install the driver & utility for Windows.

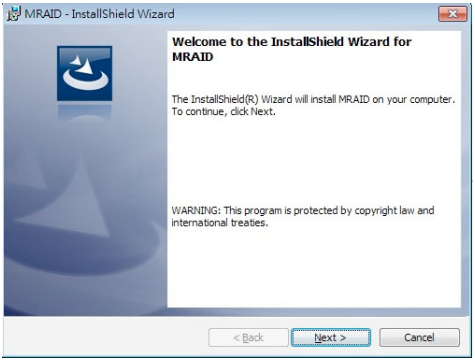
1. Download the install_mraid installer from the website at "*http://www.areca.com.tw/support/s_thunderbolt/thunderbolt.htm*", the file name begins with "install_mraid" followed by the version control or insert the ThunderBox 600 software CD in the CD-ROM drive.

2. Double-click on the zipped file that comes from the website or resides at <CDROM>\PACKAGES\Windows to unzip it. Double-click on the "setup.exe" file for installing MRAID.

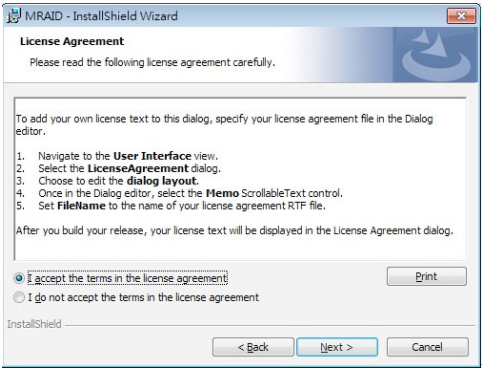
3. The screen shows Preparing to Install.


MRAID - InstallShield Wizard
Preparing to Install...
MRAID Setup is preparing the InstallShield Wizard, which will guide you through the program setup process. Please wait.
Extracting: MRAID.msi
Cancel

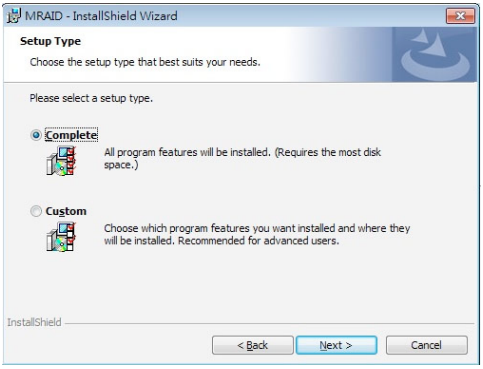
4. The MRAID Installer (or InstallShield Wizard) opens, preparing to install and click on the "**Next**" button to continue.


MRAID - InstallShield Wizard
Welcome to the InstallShield Wizard for MRAID
The InstallShield(R) Wizard will install MRAID on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treatries.
< Back
Next >
Cancel

5. When the License Agreement screen appears, read and agree to the license information; then let the InstallShield Wizard guide you through the installation process.

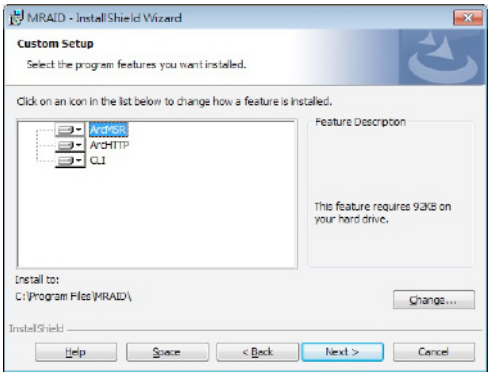

MRAID - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
To add your own license text to this dialog, specify your license agreement file in the Dialog editor.
1. Navigate to the User Interface view.
2. Select the LicenseAgreement dialog.
3. Choose to edit the dialog layout.
4. Once in the Dialog editor, select the Memo ScrollableText control.
5. Set FileName to the name of your license agreement RTF file.
After you build your release, your license text will be displayed in the License Agreement dialog.
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
InstallShield
< Back
Next >
Cancel

6. On the Setup Type screen, use the settings to specify these things: and click on the "**Next**" button to continue.


MRAID - InstallShield Wizard
Setup Type
Choose the setup type that best suits your needs.
Please select a setup type.
Complete
All program features will be installed. (Requires the most disk space.)
Custom
Choose which program features you want installed and where they will be installed. Recommended for advanced users.
InstallShield
< Back
Next >
Cancel

- "Complete" to install driver, ArcHTTP and CLI utility at once, check the first box.
- "Custom" to install special components and change the program directory. When this "**Custom**" check box is checked, go to the Custom Setup screen.

6-1. On the Custom Setup screen, click on an icon to install special components and click on the "**Next**" button to continue.

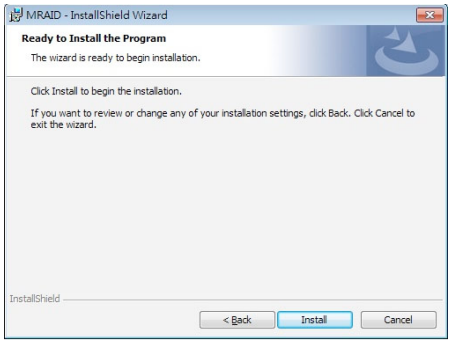


- **Driver** is required for the operating system to be able to interact with the ThunderBox 600 RAID storage.

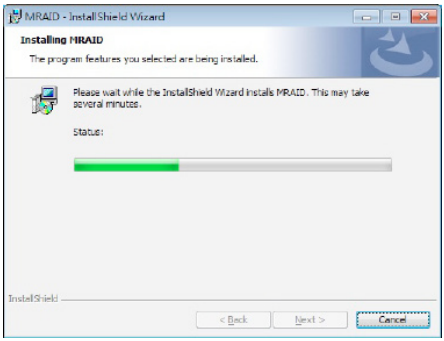
- **ArcHTTP** has to be installed for GUI RAID console (McRAID storage manager) to run. It also runs as a service or daemon in the background that allows capturing of events for mail and SNMP traps notification. Refer to the chapter 3 ArcHTTP Configuration on ThunderBox 600 user manual, for details about the mail and SNMP traps configuration.

- **CLI (Command Line Interface)** provides the functionality available in MRAID storage manager through a Command Line Interface. You can set up and manage RAID storage inline. CLI performs many tasks at the command line. You can download CLI manual from Areca website or software CD <CDROM>\ DOCS directory.

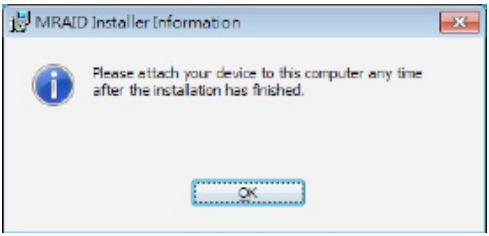
7. When you reach the installation page, click on the "**Install**" button to continue.


MRAID - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

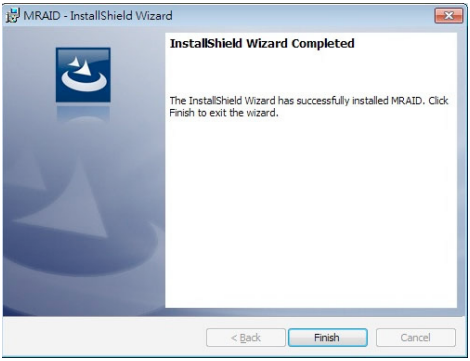
8. A program bar appears that measures the progress of the driver installation.


MRAID - InstallShield Wizard
Installing MRAID
The program features you selected are being installed.
Please wait while the InstallShield Wizard installs MRAID. This may take several minutes.
Status:
InstallShield
< Back
Next >
Cancel

When this screen completes, you have completed the MRAID installation. If you have no ThunderBox 600 RAID storage unit yet connected or powered on, a "MRAID Installer Information" message displays.


MRAID Installer Information
Please attach your device to this computer any time after the installation has finished.
OK

9. After installation is complete, click on the "**Finish**" button to exit the InstallShield Wizard.


MRAID - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed MRAID. Click Finish to exit the wizard.
< Back
Finish
Cancel

10. The ArcHTTP and CLI are installed at the same time on ThunderBox 600. Once ArcHTTP and CLI have been installed, the ArcHTTP background task automatically starts each time when you start your computer. There is one MRAID icon showing on your "Programs" folder. This icon is for you to start up the McRAID storage manager (by ArcHTTP) and CLI utility. If you have not yet installed the hardware, please follow the "1.5.1 Physically Install RAID Storage and Drives" section to install it. Otherwise, to begin the creation volume, go on the "1.5.3.2 Configure RAID Volumes" section to configure the volume.

Note:

"For Windows, Install Driver First"

For Windows PC: the Thunderbolt certified device driver must be installed before plugging in the device for it to function properly.

1.5.3.2 Configure RAID Volumes

There are often multiple ways to accomplish the same configuration and maintenance tasks for your RAID storage. Your ThunderBox 600 RAID storage can be configured by one of the following methods:

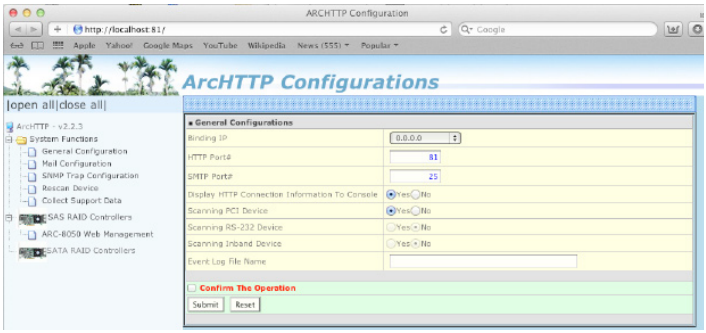
1. McRAID Storage Manager from ArcHTTP. (Thunderbolt port)
2. McRAID Storage Manager Through LAN port.
3. LCD Panel with Keypad.

- Method 1: McRAID Storage Manager From ArcHTTP

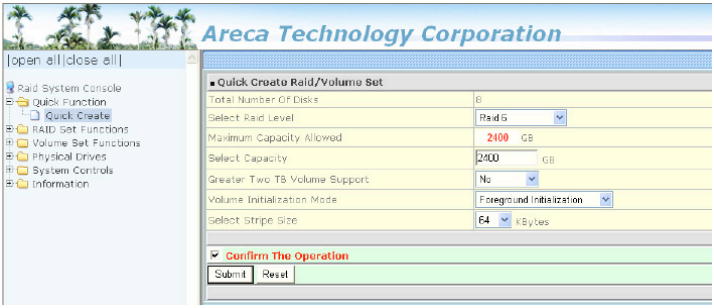
  Start McRAID Storage Manager – Browser Edition

  Right-click on the "**Start**" menu and choose "**Programs**". Double-click on the "**MRAID**" program icon to start the ArcHTTP utility (From the Start menu, choose Programs > MRAID > ArcHTTP).

  When you double-click on the "**ArcHTTP64**", it shows all RAID storages available on the system and create an individual RAID storage icon located on left column of the "ArcHTTP Configurations" screen.



  Locate "ThunderBox 600 Web Management" and launch the selected McRAID storage manager. Enter RAID storage default User Name "**admin**" and the Password "**0000**" when the login page prompted for it. After logging in, the McRAID storage manager process starts.

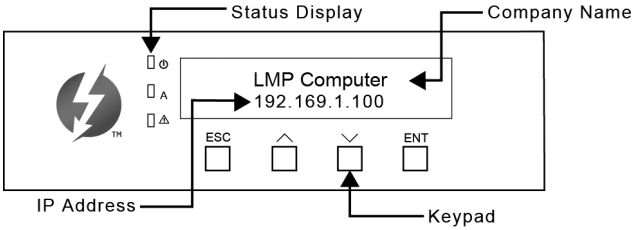


Click on the "Quick Create" in the main menu, your volume is automatically configured based on the number of disks in your system. You can create a RAID set associated with exactly one volume set. The user can change the Raid Level, Capacity, Initialization Mode, and Stripe Size. A hot spare option is also created, depending on the exist configuration. Click on the "Confirm The Operation" check box and click on the "Submit" button, the RAID set and volume set will start to initialize. If you prefer to customize your volume set, please use the "Raid Set Functions" and "Volume Set Functions". See chapter 4 of ThunderBox 600 user manual for information on customizing your RAID volumes using McRAID storage manager. Otherwise, to begin using the ThunderBox 600 right away, go on the next "Format the Volume" section to begin the formatting procedure.

- Method 2: McRAID Storage Manager Through LAN port
  User can remote manage the RAID storage directly connected to the 10/100Mbits RJ45 LAN port via standard web browsers. To configure ThunderBox 600 RAID storage using a LAN port, you need to know its IP address. The default IP address will be shown on the LCD initial screen. Launch your web browser-based McRAID storage manager by entering http://[IP Address] in the web browser. Enter RAID storage default User Name "**admin**" and the Password "**0000**" when the login page prompted for it. After logging in, the McRAID storage manager process starts. Follow the on-screen steps, responding as needed, to configure RAID volume. See the Chapter 4 of ThunderBox 600 user manual for information on customizing your RAID volumes using McRAID storage manager.

- Method 3: LCD Panel with Keypad
  You can use LCD front panel and keypad function to simply create the RAID volume. The LCD status panel also informs you of the disk array's current operating status at a glance. The LCD configuration is described in a separate manual: ThunderBox 600_LCD manual. It is available on your CD, in the /docs folder. The LCD provides a system of screens with areas for information, status indication, or menus. The LCD screen displays up to two lines at a time of menu items or other information. ThunderBox 600 RAID storage default User Name is "**admin**" and the Password is "**0000**".

The LCD initial screen is shown below:



1.5.3.3 Format RAID Volumes

After the volume set is ready for system accesses, it needs to be partitioned, formatted, and mounted by the operating system.

The following steps show how to make any new disk arrays or independent disks accessible to Windows system.

1. Click "Start" ==> right-click "Computer" and select "Manage".

2. Click "Disk Management" in the left pane.

3. Scroll down to the bottom of the middle pane. Windows will display a list of new drives attached to your system with a label such as "Disk 1" or "Disk 2", etc.

4. Right-click on the drive you want to partition and then again to format it.

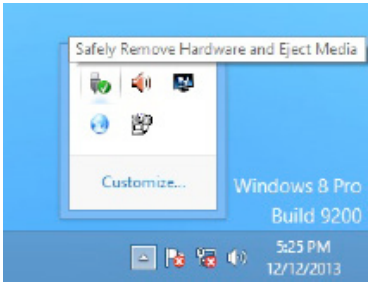
5. Once it's formatted, Windows automatically assigns the next available drive letter to it and then it will appear in Windows Explorer.

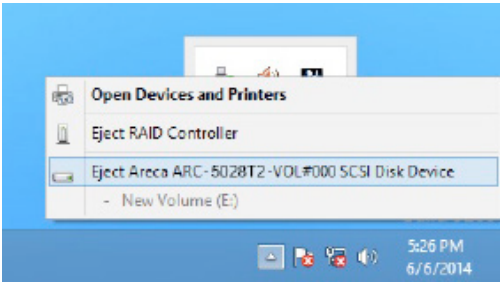
1.5.3.4 Unmounting RAID Volumes

To avoid possible data corruption, LMP recommends that ThunderBox 600 RAID storages volume(s) be properly unmounted from the computer prior to turning off the RAID storage or safely removing the Thunderbolt interface cable.

To unmount ThunderBox 600 RAID storage from a Windows system:

1. Click on the "Safely Remove Hardware and Eject Media" icon in the notification area, at the lower right-hand side of your screen, and then, in the list of devices, choose the Thunderbolt storage volume option that you want to remove.

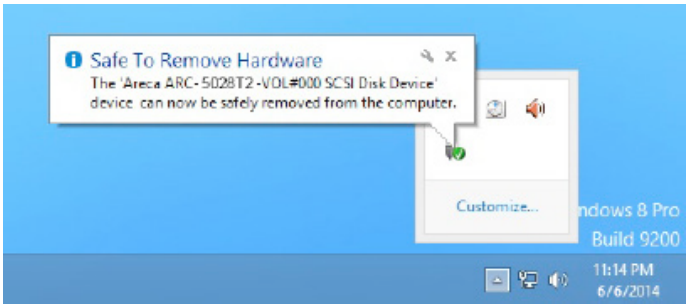




Note:

You can also safely remove devices from the computer folder. Click the "Start" button, click "Computer", right-click the device you want to remove, and then click "Eject".

2. Windows will display a notification telling you it's safe to remove the Thunderbolt storage volume. Now you can unplug the Thunderbolt cable.


Safe To Remove Hardware
The 'Areca ARC-5028T2-VOL#000 SCSI Disk Device' device can now be safely removed from the computer.
Customize...
Build 9200
11:14 PM
6/6/2014

2. Specification

This section presents a brief overview of the 6Gb/s SAS RAID storage, ThunderBox 600. (Thunderbolt 2 & USB 3.0 to 6Gb/s SAS RAID storage)

2.1 Overview

Unleash Your Creativity Faster Than Ever

ThunderBox 600 features two cutting-edge interfaces, Thunderbolt 2 and SuperSpeed USB 3.0. Thunderbolt 2 is full backward compatibility to the same cables and connectors used with today's Thunderbolt. It pushes speed to 20Gb/s and enables 4K video file transfer and display simultaneously. ThunderBox 600 is equipped with dual Thunderbolt 2 ports for connecting to any Thunderbolt 2-enabled host such as the new Mac Pro, and offers an additional Thunderbolt 2 port for daisy-chaining other peripherals. The Thunderbolt daisy-chaining allows connection of up to six devices, so customers can connect ThunderBox 600 for massive amounts of video storage with a single Thunderbolt connection to their host computer. ThunderBox 600 can meet the demand of users when working with rich, ultra-high resolution media through Thunderbolt 2 interface. The SuperSpeed USB 3.0 interface offers high-performance connectivity and is backward compatibility with any computer running compatible versions of Mac OS X (such as Mac Pro) or Windows.

Unparalleled Performance for 4K Workflow

ThunderBox 600 is a 6-bay 6Gb/s SAS/SATA Thunderbolt 2/USB 3.0 storage with RAID control capabilities solution for Mac and PC environment. ThunderBox 600 incorporated high performance ROC and 1GB DDR3 memory with ECC protection to deliver true hardware RAID for the video editor working with real time multi-stream HD and 4K workflows. It runs efficiently without disruption or major drops in performance to meet the requirements of 4K data workflow. It is so quick it allows for 4K displays at the same time as daisy chaining ThunderBox 600 and doing a simultaneous 4K output and file transfers while maintaining maximum throughput.

Enterprise-class Data Availability and Security

ThunderBox 600 supports the hardware RAID 6 engine to allow two HDDs failures without impact the existing data and performance. It allows users to hot swap drive in the event of a drive failure with zero downtime. Its high data availability and protection derives from many advanced RAID features on the design. Intelligent power On/Off function on storage turns power in unison with the host computer power status. It can intelligently power down the unit after the thunderbolt host shuts down everything for data integrity. ThunderBox 600 also supports a battery backup option that protects all data in cache memory in the event of unexpected power outage. ThunderBox 600 supports USB 3.0 interface that allows old Mac Pro user and newest Mac Pro model to access same storage seamlessly.

Enabling an Easy-to-Manage Storage

Configuration and monitoring can be managed either through the LCD control panel, Thunderbolt interface or LAN port. The intelligent cooling continuously adapts to environmental conditions by automatically controlling the speed of the cooling fans for the rapidly growing demand from the video editing markets. You can even configure ThunderBox 600 to intelligently spin down drives during periods of inactivity to further reduce noise and save energy. LMP solution of Thunderbolt 2 provides user the capability of adding bootable drive via Thunderbolt on Apple thunderbolt-capable machine.

2.2 Features

Controller Architecture

- ARM based 933MHz storage I/O processor
- 1GB on-board DDR3-933 SDRAM with ECC protection
- Write-through or write-back cache support
- Support 6 internal 6Gb/s SAS/SATA ports
- Support bootable from RAID storage volume
- Redundant flash image for controller availability
- System status indication through LCD, LED and alarm buzzer
- Intelligent power On/OFF function
- Battery Backup Module ready (optional)

RAID Features

- RAID level 0, 1, 10(1E), 3, 5, 6, 30, 50, 60, Single Disk or JBOD
- Multiple RAID selection
- Support up to 1MB stripe size
- Online array roaming
- Online RAID level/stripe size migration
- Instant availability and background initialization
- Multiple pairs SSD/HDD disk clone function
- SSD automatic monitor clone (AMC) support
- Support global and dedicated hot spare
- Automatic drive insertion/removal detection and rebuilding
- Advanced configuration for smooth data streaming
- Support intelligent power management to save energy and extend service life
- Complete configuration management suite
  - McRAID manager – browser-based management tool (LAN or Thunderbolt)
  - Push Buttons and LCD Display panel for setup and status
  - Command Line Interface (CLI)- scriptable configuration tool
  - API libraries support - combine GUI with user management utility
  - SNMP support for remote monitoring
  - SMTP support for email notification

Function Advantages

Features	Benefits
Bootable Drive Support	Provide user the capability of adding bootable drive via Thunderbolt on Apple thunderbolt-capable machine.
Advanced Configuration	Provide optimized parameter to adjust controlled firmware behavior for smooth data streaming.
USB 3.0 Support	1. Offer high-performance connectivity and is backward compatibility with any computer (such as Mac Pro) running compatible versions of Mac OS X or Windows. 2. Allow both old Mac Pro and newest Mac Pro model to access same storage seamlessly.
BBM Support	Supports a battery backup option that protects all data in cache memory in the event of unexpected power outage for data availability.
Intelligent power On/Off function	Turn ThunderBox 600 power in unison with the host computer power status for data integrity.
Front Panel LCD and Buttons	Easy access for configuration and status report.

Product Features

Form Factor	Compact - 6 Bays
Host Connection	Two 20 Gb/s Thunderbolt 2 Technology/ One 5Gb/s USB 3.0 Port
Disk Support	6 x 6Gb/s SAS/SATA 3.5”/2.5”HDDs/SSDs
OS Support	Mac OS X 10.8.5 or Higher & Windows 7/8
Enclosure Management	Thunderbolt Port, LAN Port, and LCD
Operating Temperature	0 ~ 40°C
Operation Humidity	5% ~ 95 %, Non-condensing
Power Supply/In/out	180W / 100-240V AC
Dimension (W x H x D)	4.84 x 8.45 x 9.11 in (146 x 255 x 290 mm)
Weight (W/O Drives)	13.2 lbs / 6.0Kg